SOUTH FORK TRINITY RIVER/HAYFORK CREEK
SEDIMENT TOTAL MAXIMUM DAILY LOADS

Comment Responsiveness Summary

December 30, 1998

Due to the length of comments received, many comments are paraphrased in this summary.

List of Commentors

1. Emilia Berol, South Fork CRMP, Editor-Steelhead Special (oral)
2. Joseph Bower, Citizens for Better Forestry (oral, written)
3. Joseph Brecher, representing Pacific Coast Federation of Fisherman's Assns. et al. (oral)
4. Marc Bruvry, Terrace Ranch, Hyampom (written)
5. Bernard F. Bush, Simpson Timber Company (oral, written)
6. Carolyn Cook, Six Rivers National Forest (oral)
7. Michael Dean California Dept. Of Fish and Game (written)
8. Stuart Farber, Timber Products Company (oral, written)
9. Larry Glass, South Fork Mountain Defense (oral, written)
10. Danny Hagans, Pacific Watershed Associates (oral)
11. Patrick Higgins, fisheries consultant, Arcata (oral)
12. Steve Horner (oral)
13. Jennifer Lance, Hyampom (written)
14. Alan Levine, Coast Action Group (oral, written)
15. Sarah Maninger, Arcata (written)
16. Michele Marta, Sonora (written)
17. Tim McKay, Northcoast Environmental Center (oral)
18. Marion Miller, Kneeland (oral, written)
19. Leah Miller-Freeman, Hyampom (written)
20. Ralph Modine, Trinity County Board of Supervisors (oral, written)
21. Carol E. Moné, Trinidad (written)
22. Stan Plowman, North Coast Regional Water Quality Control Board (oral)
23. John Rapf, Butter Creek Ranch, Hyampom (written)
24. Steven Self, Sierra Pacific Industries (oral)
25. Paul Spitler, California Wilderness Coalition (written)
26. Tim Viel, Natural Resources Conservation Service (written)
27. Sheóm Walker-Rose, South Fork Trinity River Land Conservancy (written)
28. Karen Wilson, South Fork Trinity Up-River Friends (written)
29. S.E. "Lou" Woltering, Six Rivers National Forest (written)

COMMENTOR 1: Emilia Berol, Arcata. Oral testimony at public hearing 11/19/98.

Comment 1.1: General Comment. I interviewed many long term residents, who all told me that the changes that occurred after the 1964 flood were devastating, including filling of 30-foot pools and loss of river structure. There were many fish prior to World War II, and no logging. But by the mid 1950s they were beginning to notice that the river didn't clear up as readily after storms, and after 1964 the fish populations declined significantly and haven't really recovered. It's important to consider these long-term effects. We also need to recognize that the watershed is a reservoir of botanical and biological diversity.

RESPONSE: EPA appreciates the comment, which appears to be consistent with our assessment.

COMMENTOR 2: Joseph Bower, Citizens for Better Forestry. Oral testimony at public hearing; letter dated 11/20/98.

Comment 2.1: General Comment. We support this first step to improve the water quality. Sediment has choked this river since 1964 and has destroyed habitat for a once abundant anadromous fishery, and much of the problem is related to man's activities on the hillslope, primarily with roads.

RESPONSE: Comment noted. We agree that many of the sediment problems are related to roads. This is one of the reasons that we have included targets and allocations related to roads and hillslopes.

Comment 2.2: Source Analysis. The source analysis estimate that attributes only 35% of the sediment to management sources seems underestimated. We have observed many road washouts in the watershed, any one of which would exceed the 39,554 tons/yr allocated to this source. When the washed out road prism is added to the huge amounts of soil lost in the resulting debris torrents, one has to conclude this allocation is way underestimated. It is also important to note the McCleary report done by the Forest Service after the 1964 flood, which concluded that the watersheds that were essentially unroaded and unlogged at that time had little or no damage. The watersheds that were extensively roaded and harvested are the ones that contributed all the damage in that flood. The 1955 storm was of the same magnitude and did not result in the damage because the watershed was primarily unroaded in 1955. The tremendous amount of logging in the early 1960s damaged the watershed. That must be factored into the percentage of man's activities or the percentage of the source here related to man's activities.

RESPONSE: EPA utilized the best information that is available to us at this time to develop the source analysis. This included field assessment of road washouts as well as assessment of previously-collected data.The commentor did not provide information related to the assertion that the amount of road washouts is underestimated, and we do believe that it is a reasonable estimate. We acknowledge the possibility that the source analysis may have some errors, and it may be possible to update the analysis in the future if additional information becomes available. It is also important to note that if the amount of the overall sediment load attributed to management sources is in fact underestimated, then the source reductions required (% reductions from the historical sediment load found in Table 11) are relatively more stringent than they would otherwise be (since we would not require reductions for natural background). We are thus erring on the conservative sidein terms of the source reductions that are required for the allocations.

We attempted to locate the McCleary report that the commentor referred to, but were unsuccessful. However, the findings were referenced in other documents that we did use, and are generally consistent with our overall analysis. We also acknowledge in the TMDL that the maximum flood in storm was of a *similar* magnitude, nearly as large as the maximum flood in 1964, although its characteristics were different in some important ways, such as the 1964 flood being the result of rain falling on snow, and considerable antecedent moisture. We do note, however, that the fish population appeared to recover following a sudden decrease after the 1955 flood, whereas it did not recover following the 1964 flood. The aerial extent of logging and road building was also factored into the source analysis.

Comment 2.3: Hillslope Targets. The only activity that can be controlled to improve water quality is from man's activities. The most important aspect of the TMDL are the targets to decrease hillslope and road related sediment production. This section could be improved by: 1) expanding Target 4A to include failure potential, since many crossings fail without diversion; 2) target the most at-risk roads first, such as those in inner gorge locations; 3) for Target 4C, require that all roads in the watershed are hydrologically secured with fail-safe design or receive annual inspection and maintenance.

RESPONSE: We agree, and we included several changes to the hillslope targets that address these concerns.

Comment 2.4: Dates for Hillslope Targets. We suggest the EPA add dates that require plans to be in place for achievement of hillslope targets by January 1, 2000 and implementation completed by January 1, 2010, with the most at-risk sites targeted for early years. Only firm dates to complete the needed work will give us a reasonable expectation of achieving the goals set forth in the TMDL. We're over 30 years down the road from the time the Clean Water Act was passed. We need dates to fix the problems

RESPONSE: The TMDL is not required to include implementation measures, which is a State responsibility. However, EPA recognizes that implementation is an important aspect of water quality improvements, and the Implementation and Monitoring Recommendations has been modified to include stronger recommendations on timelines.

COMMENTOR 3: Joseph Brecher, . Oral testimony at public hearing 11/19/98.

Comment 3.1: Implementation. The TMDL has a statement that EPA expects the State to promulgate implementation plans for the TMDL. I don't know what that expectation's built on. The Garcia River hasn't been enacted by the State Board, and as a result there's no implementation. I would like to find out what EPA is going to do when it suddenly discovers that there isn't going to be any implementation because the State may never promulgate the TMDL and put them in the basin plan. And there needs to be a fall-back position by EPA in the event that implementation doesn't occur. The implementation section should contain more than a page and a half simply saying that the State should do it. At the very least, there should be a copy of implementation that the State does in its proposals, saying that if you don't do this, we'll do it.

RESPONSE: The State is responsible for implementation and enforcement of water quality standards and TMDL provisions. Since none of the sediment sources in the watershed are currently subject to discharge permits required by the federal government (i.e., NPDES permits), EPA is not resonsible for enforcement or oversight of State enforcement of load allocations or TMDL implementation provisions. However, EPA is also interested in assuring that the TMDL is implemented in a timely fashion. To that end, we have added additional recommendations to the TMDL.

COMMENTOR 4: Marc Bruvry, Terrace Ranch, Hyampom. Letter (no date).

Comment 4.1: General Comments. I support the TMDL as an initial step to improve the water quality of the South Fork Trinity River. I've been in the watershed since before 1964 so I can testify to the destruction of fishery habitat as a result of reckless logging related activities that continue to this day, and it has caused social and economic destruction.

RESPONSE: Comment noted.

Comment 4.2: Hillslope and Road-Related Targets. It is important that the TMDL targets the decrease of upslope and road related sediment production, which is the most obvious and sensible solution to the difficulty of quantifying man's true sediment contribution to the South Fork.

RESPONSE: EPA agrees, and has added additional hillslope targets to address these concerns.

Comment 4.3: Timelines for Road Maintenance Plans. I would suggest that EPA require that sediment reduction plans be in place by January 1, 2000 and the implementation completed by January 1, 2010, and that the most at risk sites be targeted in the early years..

RESPONSE: The TMDL is not required to include implementation measures, which is a State responsibility. However, EPA recognizes that implementation is an important aspect of water quality improvements, and the Implementation and Monitoring Recommendations has been modified to include stronger recommendations on timelines.

COMMENTOR 5: Bernard F. Bush, Simpson Timber Company. Oral testimony at public hearing 11/19/98; letter dated 12/1/98.

Comment 5.1: Redwood Creek Landowners' Association Alternative Proposal. We believe that most of the elements of the alternative strategy are applicable to the South Fork Trinity and request that EPA review that strategy in full for a complete discussion of concerns.

RESPONSE: The commentor appears to be suggesting that the Redwood Creek Landowners' Association alternative proposal would serve the purpose of the South Fork Trinity River TMDL. EPA has reviewed this proposal for purposes of establishing the Redwood Creek TMDL. The RCLA proposal contains no sediment TMDL for Redwood Creek. Rather, the proposal describes RCLAs views concerning TMDL requirements and argues that the TMDL proposed by the North Coast Regional Water Quality Control Board (Regional Board) is inconsistent with Clean Water Act requirements. The RCLA's comments concerning alleged deficiencies in the Redwood Creek TMDL proposed by EPA are summarized below; comments in the proposal concerning the State's TMDL proposal which are repetitive of comments concerning the EPA TMDL are not addressed in this responsiveness summary.

RCLA suggests that an "alternative approach" to TMDLs is appropriate for Redwood Creek (petition, p. 7). This alternative approach appears to be an argument that water quality is not impaired in Redwood Creek, that any impairment is caused solely by historic sediment discharges, and that current and future expected sediment loadings will not contribute to water quality impairment and therefore need not be controlled. EPA disagrees that water quality impairment of Redwood Creek or South Fork Trinity River is clearly associated solely with historical sediment discharges and that existing data support a finding that a TMDL is unnecessary. Because a TMDL is required, EPA considered whether the RCLA petition contains a TMDL which includes the required components of an approvable TMDL. The petition does not contain any of the required elements of a TMDL and therefore cannot be considered a viable alternative to the EPA-proposed TMDL. Because EPA's TMDL does not and is not required to contain implementation measures, EPA did not review the implementation provisions of the RCLA petition implementation section for purposes of this responsiveness summary.

Comment 5.2: Sediment Source Analysis. Commentor questions the validity of the various numbers used in preparation of the TMDL, and expresses concern that the final sediment budget is not available for review.

RESPONSE: The source analysis is available upon request. The source analysis was developed using the best information that is available to us at this time, which we are obligated to use. The commentor does not mention specific aspects of the analysis or of the final document, so we are unable to identify any additional concerns.

Comment 5.3: Current Land Use Activities. Commentor is concerned with the lack of analysis of sediment loading associated with current land use activities.

RESPONSE: We assume that the commentor is referring to the fact that the sediment analysis covers the period from 1944-1990, and does not include an analysis of the 1990-1998 period. EPA agrees that it would be preferable to include analysis covering the 1990-present period. However, we consider the loading analysis to be reasonable,since it is based upon a fairly lengthy period that included a range of hydrologic conditions. It is possible that additional analysis for the most recent period would be inconclusive, as it covered a period of considerable drought, and little change would be expected. The 1997 winter season did include a peak flood that

was within the largest 10 on record, and could suggest how the watershed is responding to current conditions. Data for that season (including, for example, aerial photographs for analysis) were not available during the TMDL development. We encourage additional analysis in the future to update the source analysis within the TMDL.

Comment 5.4: Instream Targets. Commentor believes that instream targets should be measured as improving trends, not as numeric targets.

RESPONSE: EPA agrees that many of the instream targets should be measured as improving trends, and we have included several that are measured as improving trends. Furthermore, the TMDL specifies that these targets should be evaluated as long-term running averages, which is consistent with looking at the targets as improving trends. However, to specify all the targets as improving trends would not sufficiently fulfill the intention of the targets, which are to describe desired future conditions that represent attainment of water quality standards.

Comment 5.5: Road Density Target. The road density target is extremely onerous and without merit. It's an unrealistic number, because the cost of road removal is astronomical. Storm-proofing is a better approach to dealing with roads. Some will be removed but relieving erosion potential is more cost-effective.

RESPONSE: EPA has removed the road density target in favor of additional, more specific road- and harvest-related targets. These additional targets more directly address potential sediment delivery to streams.

Comment 5.6: Watershed Conditions; Forest Practice Rules. Water quality in the South Fork Trinity is improving and sediment loads have been declining, due in part to improved practices mandated by the Forest Practice Act and voluntary enhancement actions by landowners. We do not believe that the TMDL process needs to include additional and costly restrictions on landowners that have already demonstrated the willingness and ability to improve conditions.

RESPONSE: EPA concurs that water quality in the South Fork appears to be improving, and that this may be due in part to improved management practices. It is EPA's intention to improve water quality conditions to the extent that they meet water quality standards, and it is not our intention to require actions that are not needed to protect water quality. This comment also appears to address *implementation* of both existing regulations and the TMDL, which is not part of this TMDL decision. However, landoners are encouraged to share their monitoring data with the State and with EPA, including data related to implementation and effectiveness of current practices.

COMMENTOR 6: Carolyn Cook, Six Rivers National Forest. Oral testimony at public hearing 11/19/98.

Comment 6.1: USFS and EPA Concerns. The Forest Service shares a concern with EPA and the State regarding the restoration of impaired watersheds. EPA's participation, through the CRMP and other avenues has been very productive. It's helped our understanding of the TMDL process and the package is more implementable now than where we initially started a few years ago.

RESPONSE: Comment noted. We agree that the two agencies share concerns regarding water quality protection and improvement, and that EPA's participation in multiple avenues has been helpful in strengthening the document and in improving mutual understanding.

Comment 6.2: In-Stream Targets. The Forest Service is encouraged to see relatively few instream targets. They are a weak and dangerous way of implementing TMDLs. There's a lack of direct, scientifically defensible relationship between hillslope actions and downstream responses, particularly on the scale of the South Fork. And they can get misused and misconstrued by people or interest groups. We recommend that instream indicator targets be addressed as improving trends as opposed to hard numbers. And if hard numbers and targets are legally necessary as part of the TMDL process, that you limit, if at all possible, the instream targets to one indicator,

preferably fine sediment, which is fairly repeatable and not too costly. If we focus all our efforts on monitoring these targets, we take away the efforts and the money that can go into the implementation of the hillslope actions that can lead towards the restoration. If instream targets are legally necessary, they should be clearly stated as legally unenforceable, as the State has indicated.

RESPONSE: Clean Water Act Section 303(d)(1)(C) requires a total maximum daily load to be set at a level necessary to implement the applicable water quality standards. While Section 303(d) does not explicitly require EPA to set numeric targets as a means to interpret and apply applicable water quality standards, the terms used in Section 303(d) (e.g., "total maximum daily load", "set at a level") imply that a quantitative approach to TMDL development is appropriate. Where applicable water quality standards are narrative, it is appropriate to develop quantitative interpretations of these standards in order to support the additional analysis needed to calculate TMDLs which will result in attainment of those standards. We do believe that the recommended targets can also form the basis of an effective monitoring plan. Also see response to Comment 5.4.

However, EPA does not intend that the targets should be misconstrued, and we have added text to the TMDL that further describes the inherent variability of instream targets. Furthermore, we do agree that it would be preferable to focus efforts on the hillslope, which can address future sediment contributions. For this reason, we have limited the number of instream targets that we are using to describe the watershed, and we have included additional hillslope targets. We do include targets for fine sedeiments, as the commentor has noted. The indicators for which we do not feel that we have an adequate basis to set a firm target are described as "improving trends."

The State is responsible for implementation and enforcement of water quality standards and TMDL provisions. In its draft TMDL Strategy, the State has indicated its interpretation that instream numeric targets would not be enforceable. Since none of the sediment sources in the watershed are currently subject to discharge permits required by the federal government (i.e., NPDES permits), EPA is not responsible for enforcement or oversight of State enforcement of load allocations or TMDL implementation provisions.

Comment 6.3: Hillslope Targets. The Forest Service is encouraged that the TMDL incorporated hillslope targets or indicators. These are the only logical indicator and process that land managers have any influence over, can respond to, and will make any difference in the long term as far as sediment reduction. We recommend that these indicators be clearly stated in the TMDL as the legally enforceable targets. We also recommend that the road density and road maintenance indicators be dropped and other hillslope indicators substituted for them that would better serve the purposes of reducing long-term sedimentation.

RESPONSE: We agree that hillslope targets are necessary to be directly understandable and influenceable by land managers. We have also removed the road density target and changed the remaining hillslope indicators to more directly address sedimentation, which largely responds to the commentor's concerns. As with instream targets, the State is responsible for enforcement (see Comment 6.2).

Comment 6.4: Allocations. We recommend that bank erosion not be attributed directly to specific management actions such as harvesting and road-related bank erosion, but if necessary be lumped into the "cumulative effects" category, and reduce that allocation or controllable sediment more close to what's comparable to the mass-wasting indicator there. We also recommend that the allocations among the various erosional source mechanisms be distributed geographically, as there are very different erosional processes occurring across this landscape. This will result in a better chance of addressing the appropriate restoration measures.

RESPONSE: We agree that bank erosion is more appropriately aggregated into a "cumulative effects" category, and we have reduced the "controllability" to reflect that change. EPA recognizes that different erosional processes occur across the landscape, and we have included that information to the maximum extent practicable. However, we did not have information available to us within the the schedule imposed by the Consent Decree to segregate the allocations geographically, as the commentor requested. The State may wish to obtain that information in the

future, in the development of its implementation plan.

Comment 6.5: Allocations; Controllable Load for Mass Wasting. For road and harvest, the percentages that are allocated as controllable should be reduced or at least commensurate with those in other TMDLs. Mass wasting is unpredictable, and to say that we have a 60-80 percent chance of controlling that is not necessarily within our power.

RESPONSE: EPA disagrees that the percent controllable for road- and harvest-related mass wasting should be reduced. The fact that mass wasting occurs in response to storm events would nto justify overlooking the impacts of inappropriately placed roads or harvest areas. Furthermore, it is possible that many of the USFS policies currently being implemented may have begun the process of reducing those loads over historical levels. For example, Forest Service policy does not include harvest in streamside zones. Additional actions, such as removal of roads in unstable areas, headwalls and inner gorge locations may be called for. These appear to be consistent with current Forest Service policies.

COMMENTOR 7: Michael Dean, Project Leader, California Dept. Of Fish and Game. email dated 11/19/98.

Comment 7.1: Fish Population Indicator. Using fish indicators is ideal but impractical and difficult. Establishing upslope indicators as measures of success is a quantifiable way to determine if the sources of the sedimentation problem are being addressed. If fish or sediment input to the stream (measured directly) are used as targets, the variables that affect those inputs are so complicated as to be meaningless. For example, a series of dry years may result in little sediment entering the stream during that period, and the indicators may suggest that the sediment problem has been addressed. However, the next storm or winter period could mobilize the stored sediment. Upslope targets are measurable objectives that we can demonstrate will reduce the amount of sediment entering the stream, and which are also easily understandable. Such objectives are: reducing the total number of undersized culverts to less than 5% of the total number in the drainage within 10 years, or reducing the number of "at risk" road crossings to less than 5% within 8 years, or elimination of all Humboldt style bridges and reestablishment of the natural channel morphology within 5 years.

RESPONSE: EPA agrees that upslope targets are effective, and has added targets that largely address the commentor's concerns. We have included upslope targets and have added targets covering crossing failure, road removal and upgrading in "at risk" inner gorge and steep headwater swale areas. However, we believe that a larger population of fish regularly returning to the basin would clearly indicate that the water conditions had recovered adequately to support the cold water fishery beneficical use. The TMDL also acknowledges that providing channel and watershed conditions supportive of fish habitat alone are not guarantees that the fish population will recover, since other factors, including physical conditions outside of the basin, will influence the overall population. For this reason, we have stated that an improved fish population (measured as a long-term running average, so as to accommodate inter-annual variation) would in fact indicate attainment of water quality standards, but that target is not required to be met if other targets have been met, which would indicate that channel and watershed conditions do support fish habitat. This would still indicate attainment of water quality standards.

COMMENTOR 8: Stuart Farber, Timber Products Company. Oral testimony at public hearing; letter dated 11/17/98.

Comment 8.1: Water Temperature Document. Timber Products Company has attended public meetings regarding the South Fork Trinity River TMDL and has submitted many comments. The company co-authored and submitted a report to EPA titled "Water Temperatures in the South Fork Trinity River Watershed in Northern

California," which is the most extensive and intensive analysis of water temperatures completed within the watershed. We presented the report to the South Fork Trinity CRMP and EPA. It is very disappointing that a local landowner and agency effort to describe a complex issue like water temperature in a science based approach was dismissed and not even noted by the EPA in the proposed TMDL. I hope EPA reconsiders our temperature study.

RESPONSE: EPA applauds the effort that you and others put into the temperature analysis, and it is not our intention to overlook the effort that was put into the document. In fact, the report was mentioned briefly in the draft TMDL, but was improperly cited. This has been corrected, and a second reference was added. However, this TMDL addresses sediment, as required under the Consent Decree, and it does not address temperature. Temperature was added as a stressor for the South Fork Trinity River and Hayfork Creek basins only in the 1998 list of water quality limited waters (the 303(d) list). We were not able to address both of these complicated issues within the schedule required for this TMDL. Our decision not to address the temperature issue in this short time frame is also consistent with many of the comments we received in response to discussions of the temperature issue in public meetings. However, a temperature TMDL will be required in the future. Your report will be of great use for that process. Although it is not required for this sediment TMDL, a reference to the report was added to the text in the hopes that it can inform the process of developing the temperature TMDL.

Comment 8.2: Linkages Between Targets and Watershed Condition. It appears that the numeric targets are not connected to the current watershed condition. The TMDL does not provide quantitative linkage between the physical and biological monitoring targets of anadromous salmonid spawners, instream fine sediment, and watershed road density targets with the improving watershed condition.

RESPONSE: We disagree. The numeric targets were developed using existing information on watershed condition. While we acknowledge that any information linking physical and biological condition of a watershed is limited by the current state of knowledge, EPA used the best available information, and believes that the targets used are the most appropriate targets that could be selected to express desired watershed conditions.

Comment 8.3: Salmonid Population Target. The EPA should remove the anadromous salmonid population target from the TMDL. Anadromous salmonid populations can be influenced by many biological and physical factors occurring in the freshwater and saltwater phases of the life cycle. Commentor cites studies in other watersheds that showed that fish density and biomass were not fully correlated to physical conditions, and states that these studies do not support use of biological targets to measure improvements in physical watershed processes. Commentor implies that the fish population indicator is drawing causal relationships between sediment and salmonid populations, and that the indicator is being used to measure response to improving stream sediment conditions is not scientifically supported. Commentor states that we do not have any kind of control over how many fish are actually going to be coming back to these streams in response to improved conditions in the stream.

RESPONSE: EPA is not attempting to draw causal relationships between stream sediment and salmonid populations by using this indicator. Nor is our intent to measure stream sediment through the use of fish populations. As stated in the TMDL and in the response to comment 7.1, we agree that anadromous salmonid populations are influenced by many factors both within and outside of the watershed, and that current scientific knowledge is limited in drawing direct links between sediment inputs and fish populations. However, we are confident that the fish population would not improve without adequate water quality, and that an improved fish population would clearly indicate improved water quality. Still,it is not required to be met to demonstrate attainment of water quality standards. Thus, we acknowledge that the population may not recover even if the channel conditions do recover. The studdy that the commentor mentioned does not suggest that this is an inappropriate indicator. Furthermore, the TMDL states that, if this target is met prior to other targets being met, other targets should be re-evaluated and revised if appropriate. See also response to Comment 7.1.

Comment 8.4: Instream Fine Sediment Targets; Comparison With Garcia River and Redwood Creek. The

TMDL proposes instream fine sediment targets that are identical to targets proposed for the Garcia River and Redwood Creek TMDLs. Is the assumption that all watersheds in Northern California had the exact same historic and "natural" sediment bedload?

RESPONSE: Actually, the instream fine sediment targets for the South Fork Trinity River are not identical to the Garcia River and Redwood Creek TMDLs, although there are some similarities where appropriate. Some of the indicators have been modified slightly for the final TMDL. EPA selected these indicators and their associated target levels based on literature and information available for the watershed. In some cases, these will result in similar indicators for different watersheds.

Comment 8.5: Road Density Targets; California Forest Practice Rules. The indicator of 1.70 mi/mi2 of road density of any kind of road does not provide a clear connection with potential sediment impairment in a stream. If there are scientific studies that describe this clear connection between just roads and impaired stream sediment conditions the EPA should cite the literature that describes this association. Otherwise the EPA should remove this non-scientific target from the proposed TMDL. Meeting or exceeding California Forest Practice Rules or Best Management Practices allows for the protection of water resources while maintaining the ability to economically manage private forestland.

RESPONSE: Please see response to Comment 5.5. In addition, the commentor appears to be suggesting that the California Forest Practice Rules are adequately protective of water quality so as to suggest that the South Fork Trinity River is currently meeting water quality standards. EPA disagrees with this assertion, and this TMDL is being developed to address the water quality limitations in the watershed. However, we have modified the road density target to more directly address the roads that are directly at risk.

Comment 8.6: Culvert Capacity and Diversion Potential Targets. The targets we want to see is how many culverts are up to the 50 year flood design. How many places do you have diversion potential.

RESPONSE: The TMDL includes a target addressing diversion potential. A target addressing crossing failure potential (including culvert capacity) has been added.

COMMENTOR 9: Larry Glass, South Fork Mountain Defense. Oral testimony at public hearing 11/19/98; letter dated 11/30/98.

Comment 9.1: Management-Related Sediment. There is no historical data to support the document's contention that such a small amount of the sediment (30%) is caused by management activities. Commentor provides several anecdotal historical descriptions of the river conditions that include deep pools, good fishing and little sediment, then states that the intensity of clear-cut timber harvest and road building beginning in the late 1950s triggered the massive changes during the 1964 flood. Contends that a debris dam formed near Forest Glen, and when the dam broke the resulting flow destroyed the integrity of the inner gorge, and the river continued to degrade after that time. Commentor states that additional damage occurred in 1971.

RESPONSE: EPA agrees that significant changes occurred in the watershed during the 1960-1975 period, and acknowledges that some potential exists for errors in the the sediment source analysis. This includes the possibility that a larger proportion of the overall sediment yield could be related to management activities. These uncertainties are described in the document, and the Margin of Safety accounts for these uncertainties. However, we disagree that there is no data to support the conclusions in the document, and we did use the best data that was available to support our conclusions.Please see response to Comment 2.2.

Comment 9.2: Targets. Setting targets are steps in the right direction in addressing the sediment disaster in the South Fork Trinity River. Commentor applauds the EPA effort.

RESPONSE: Comment is noted and appreciated.

Comment 9.3: Road Density Target. The Road Density Target (4b) should be 0.5 mi/mi^2 for subwatershed areas #6-8, Upper South Fork, Happy Camp and Hidden Valley, because these are headwaters areas and key to recovery. We believe there is no such thing in these watersheds as a "hydrologically maintenance free road." If you remove this concept from your target then you come up with approximately 0.5 mi/mi^2 for these areas. Roads shouldn't be built in the first place if they can't afford to take them out and they're not maintaining them.

RESPONSE: While we agree that protecting headwater areas is important to to watershed recovery, the commentor did not provide a analytical basis on which the evaluate his assertion that road densities should be 0.5 mi/mi^2 for certain watersheds. We do not feel that this change is appropriate. While we also disagree that there is no such thing as a "hydrologically maintenance free road," we have added some text to further articulate our intentions related to hillslope and road sediment production. Furthermore, we have revised the road-related targets to more specifically target the conditions that reflect the greatest potential for sediment delivery to streams, which appear to address the commentor 's concerns.

Comment 9.4: Enforcement. Enforcement of these targets must be very aggressive and penalties stiff for this ambitious plan to succeed.

RESPONSE: See the response to Comment 3.1.

Comment 9.5: Erosion from Clear-Cuts. Commentor made statements suggesting that clear-cuts of ten acres or larger in the inner gorge have failed into nearby drainages. Commentor pointed to Sulphur Glade Creek as an example..

RESPONSE: Comment noted. We have made a change to the upslope targets to address timber harvest in steep inner gorge areas.

Comment 9.6: Climate. The 1964 flood was not a once-in-a-millennium type of event, but more of a one-in-20-year event. What made it disastrous was the industrial forest management that had taken place in the watershed, between 1955 and that event. In 1971 there was additional damage due to heavy precipitation and the peak of cutting on the national forest. A tributary near Hidden Valley Ranch was significantly eroded, and can be directly attributed to the industrial harvest of timber by the USFS in all feeder creeks.

RESPONSE: Comment noted. No change to the TMDL is required.

Comment 9.7: Fish Population Target. It would be great to get 10,000 fish back in the watershed. It can't support 10,000 fish right now. There's more recovery needed, though it's beginning to recover. The 10,000 is an arbitrary number, and from what the Indians describe there were even more than that. It's a good target to aim for. I hope you make the targets firm.

RESPONSE: Comment noted. The target was changed to reflect the Trinity River Restoration Program Goas. See response to Comment 20.3.

COMMENTOR 10: Danny Hagans, Pacific Watershed Associates. Oral testimony at public hearing 11/19/98.

Comment 10.1: Sediment Source Analysis. Commentor questions the values in the sediment source analysis, which seems to show that the annual sediment yield is approximately one-third to one-quarter of what other published estimates, such as those from DWR or SCS, have been for total sediment yield. States that it's difficult to comment effectively without having seen the data.

RESPONSE: EPA concurs that it would be preferable to have additional information, and acknowledges the uncertainty inherent in the source analysis. However, this is the best data that is available to us at this time. See also response to Comment 2.2. The data on which EPA based this TMDL decision has been made available upon request.

Comment 10.2: Relative Source Contributions. The source analysis shows that sediment production from road surfaces is almost double of what sediment production has been from failures and diversions at stream crossings, which does not correspond with other North Coast studies. My 20 years of experience in the field has shown that the volumes from crossing failures would far exceed road surface erosion.

RESPONSE: EPA acknowledges the uncertainty in the sediment source analysis could have some errors; however, we feel that the analysis is reasonable and based on the best available information. We also acknowledge that the TMDL could be revised in the future if the understanding of sediment sources changes. Commentor doesn't provide adequate information for us to determine a rationale for change to the TMDL at this time. Please see response to Comment 2.2.

Comment 10.3: Management Contribution. Given the management histories and styles and the lengths of time in which fairly intensive forest management has gone on throughout the watershed, it does not seem realistic that two thirds of all the sediment that's been produced in the budget period is natural.

RESPONSE: See response to Comment 2.2.

Comment 10.4: Instream Targets. I encourage the use of increasing trend targets, running over a 5- or 10-year running average. That's the level of resolution that we have. Also you should say that the instream targets are not enforceable.

RESPONSE: EPA agrees that trend targets are appropriate to include in the TMDL, and has included some. Regarding enforcement, please see response to Comments 5.4 and 6.2.

Comment 10.5: Upslope Targets. I would like to commend you on including upslope targets. You should probably have targets to address all the main mechanisms of sediment production. Many of the stakeholders and landowners in the South Fork would probably concur with that.

RESPONSE: Comment noted. We have revised the hillslope targets to address what appear to be the main mechanisms of sediment production.

Comment 10.6: Diversion Potential and Crossing Failure. You need a target that addresses reducing the risk of stream crossing failure or the gullying of the fill through the road. Most landowners would also be amenable.

RESPONSE: We agree, and have added a target to address crossing failure.

Comment 10.7: Road Surface Erosion. If surface erosion is so high, you need a target that addresses the length of road that drains the streams. Along those lines, you could have some target that addresses how you're going to disconnect roads from stream crossing so that we can eliminate road surface, road ditch, and road cut-bank sediment.

RESPONSE: We have revised and clarified the targets addressing road maintenance and hydrologic connectivity, which appear to address most of the commentor's concerns. Our revisions to the other road maintenance targets also address most of the potential sediment production to streams.

Comment 10.8: Road Densities. We advocate road densities, but 1.7 mi/mi^2 is unrealistic and economically

unviable. The Cederholm study is a good example: 3 mi/mi^2 is better, but I'd caution a blanket approach. In some watersheds, 5 mi/mi^2 may be acceptable if those roads are out-sloped or have proper drainage, if the culverts are sized properly for 50- to 100-year storms, if there's trash racks in place to deal with debris, and if we build full bench roads or pull back on unstable segments of roads, you could have relatively storm-proofed roads. Density is not the key issue, but can tell you if you may have a higher risk in the watershed.

RESPONSE: We generally agree, and have revised the roads targets. Please see response to Comment 5.5

Comment 10.9: Road Maintenance Target. I may have been misquoted on page 29, and I believe that we should inspecting roads annually if the 1.5-year storm is exceeded.

RESPONSE: The road maintenance target has been revised to call for annual inspection of all roads and correction of potential for sediment input to streams prior to the winter season unless they are hydrologically decommissioned or made fail-safe.

COMMENTOR 11: Patrick Higgins, fisheries consultant, Arcata. Oral testimony at public hearing 11/19/98.

Comment 11.1: Fish Targets. Since cold water fish are an objective, you have to start thinking about fish populations. The fish targets are on the cutting edge.

RESPONSE: Comment noted. See also response to Comments 7.1, 8.3, 9.7 and 20.3.

Comment 11.2: V* Target. The V* target shows a range of 21 to 45 percent, which is from Knopp, and reflects a healthy range of conditions. Forest Service studies for the Trinity Basin show ranges of 8 to 50 percent, and 50 percent is Grass Valley Creek and 25 percent is Grouse Creek, which are extremely high values for the Trinity Basin. The targets in the South Fork should be below 30 percent and probably below 20 percent, relative to the other streams that have been measured by the Forest Service.

RESPONSE: The V* target has been revised to reflect the potential for different conditions in the less stable and fines-rich geology west of the mainstem South Fork Trinity, and the target value has been reduced for the more stable, less fines-rich geology in the rest of the basin(per Tom Lisle, pers. comm., 1998). Furthermore, the requirement for a maximum of 45 percent is eliminated in favor of the long-term running average of the mean value. The mean value of 21 percent for the west side subwatershed areas is retained, and a lower value (0.10 percent) for the remainder of the tributaries.

COMMENTOR 12: Steve Horner,. Oral testimony at public hearing 11/19/98.

Comment 12.1: Forest Practice Rules. EPA should consider the Forest Practice Rules in determining how modern practices may be affecting what could happen to the proposed targets. Also, CDF and the USFS produced a report called the "Critical Sites Erosion Study in Northwest California" which calculated that the amount of erosion from critical sites on logged areas, logged essentially under the Forest Practice Rules, only represented 5 percent of background sediment found to be in northwest California streams.

RESPONSE: Please see responses to Comment 5.6. The comment regarding the report is noted; however, it is not clear whether the commentor is making an additional request for changes to the TMDL. No change is required.

Comment 12.2: FACA Report. Please consider comments and recommendations in the TMDL FACA report concerning historical or legacy impacts to watersheds when considering allocations to modern or current activities.

RESPONSE: The FACA Committee Report has no bearing on the development of TMDLs under the current regulations. EPA is aware of it recommendations.

Comment 12.3: Fish Targets. If you use fish population targets, you need to factor in other factors like ocean productivity, since returning adult salmon will be subject to conditions downstream, in the estuary and ocean.

RESPONSE: See responses to Comments 7.1, 8.3, 9.7 and 20.3.

Comment 12.4: Fish Biomass Literature. Literature contains examples showing that, following logging, the biomass of fish increases in logged watersheds.

RESPONSE: Comment noted. No change required. In fact, we are also aware of literature showing that fish habitat is adversely affected by logging. In some cases, biomass may increase temporarily as a response to higher temperatures and greater insolation.

Comment 12.5: Road Density. Cederholm, Reid and Salo (1980) tried to analyze the effects of road density on survival to emergence a d fines in the stream and the relationship to road density, and it is about as close as flat as you can get on a regression. Also, road density in itself is a poor indicator because it's not the roads *per se* that can be a problem in a watershed, but the condition that the roads are in.

RESPONSE: EPA agrees that the most important factor is the condition of the roads and their potential to contribute sediment to the stream, and we have changed the roads indicators accordingly. Please see response to Comment 5.5.

Comment 12.6: Sediment. There needs to be some consideration that sediment is not a poison, but a natural component of these streams.

RESPONSE: EPA recognizes that sediment is a natural component of stream systems. This recognition is included in the TMDL.

COMMENTOR 13: Jennifer Lance, Hyampom. Letter dated 11/21/98.

Comment 13.1: General Comment. I strongly support this initial step to improve the water quality of the South Fork Trinity River, and appreciate that this river is getting the attention it deserves.

RESPONSE: Comment noted.

Comment 13.2: Logging Activities. My experience in the watershed predates the 1964 flood and I can testify to the destruction of fishery habitat as a result of reckless logging activites that continue to this day.

RESPONSE: Comment noted.

Comment 13.3: Upslope and Road-Related Targets. It is difficult to quantify man's sediment contribution to the South Fork, but it is undoubtedly significant. Therefore it is important that the TMDL target the decrease of upslope and road related sediment production. This is the most obvious and sensible solution.

RESPONSE: Comment noted. We agree that it is important that the TMDL target upslope and road related sediment production.

Comment 13.4: Time Frame for TMDL Achievement. It is important that the reduction of human sediment

production to the South Fork be achieved in a reasonable period of time. I suggest that the EPA require that plans be in place by January 1, 2000 and the implementation completed by January 1, 2010, and that the most at-risk sites be targeted in the early years. Without mandated dates and continued vigilance by the EPA I strongly suspect that we will only see continued delay by the responsible agencies and corporations.

RESPONSE: Please see response to Comment 3.1 and 2.4.

Comment 13.5: I hope that you can resist diluting the provisions of the TMDL as no doubt will be urged by some.

RESPONSE: Comment noted.

Comment 13.6: Road Maintenance. People, agencies and corporations must come to realize that responsibility to care for roads on an annual basis is required.

RESPONSE: Comment noted. Implementation will be addressed by the State. A target that addresses maintenance is included in the TMDL. **.**

COMMENTOR 14: Alan Levine, Coast Action Group. Oral testimony at public hearing 11/19/98; letter dated November 13, 1998.

Comment 14.1: Positive Aspects of the TMDL. The description of TMDL requirements are well presented. The analysis does a good job of dealing with sediment as a stressor, with some exceptions. With corrections, the TMDL should be included in a Basin Plan Amendment.

RESPONSE: Comment noted.

Comment 14.2: Temperature. Temperature considerations should be included in this TMDL, and are necessary to adequately address the needs of the watershed and water quality. Temperature is the potential limiting factor.

RESPONSE: As stated in the TMDL, this is a sediment TMDL. In order to meet the time constraints of the Consent Decree, EPA chose not to do a combined sediment/temperature TMDL. A temperature TMDL will be requiredin the future. Please see response to Comment 8.1.

Comment 14.3: Implementation and Monitoring. To be effective, an implementation plan should be included in the TMDL. It is important to let the State know in very strong terms what their responsibilities are in showing EPA how they'll achieve implementation goals. An implementation plan should specify minimum standards for landowners to operate under, and should address: reduction of roaded areas, protection of Class III watercourses, culvert installation and sizing, riparian zone protections, "active" unstable areas, adjusting and updating the source analysis by landowners and agencies, road and erosion control maintenance plans, special operating rules for harvesting methods, intensity and frequency, and late seral type near- stream conditions.

RESPONSE: Development of an implementation and monitoring plan for the TMDL is the responsibility of the State. However, the TMDL does include some implementation and monitoring recommendations, including many of these issues. Please also see responses to Comment 3.1.

Comment 14.4: Additional Targets to Consider. The TMDL should include targets for large woody debris, dissolved oxygen, turbidity, embeddedness, permeability, suspended sediment, and off channel habitat.

RESPONSE: We appreciate the additional suggestions, and we agree that many of these parameters could provide

useful information to the understanding of the watershed in a monitoring program. EPA did consider targets for turbidity, embeddedness, suspended sediment and permeability. For some of these, we did not have sufficient information to identify appropriate indicators or target levels. In addition, our intention is that the proposed targets will have reasonable assurance of being monitored. To that end, we consulted with land managers and landowners to determine targets that would meet the needs of the TMDL, be supportable for the TMDL, and have a high probability of ongoing or future monitoring. Many of the targets that were selected will provide similar information as those that are suggested and/or are already included in an ongoing monitoring program. Large woody debris, dissolved oxygen and off channel habitat were not considered because the linkages between those targets and sediment impairment in this basin were difficult to establish.

Comment 14.5: Channel Stability. The TMDL needs a better discussion of channel stability.

RESPONSE: EPA disagrees. The TMDL includes a fairly extensive discussion of channel stability and geomorphic changes to the channel over time. We refer the commentor to a background document (Matthews 1998) for additional detail, which is not necessary to include in the TMDL.

Comment 14.6: Source Analysis by Source. The TMDL doesn't include an appropriate analysis by source, and utilizes the best available information.

RESPONSE: EPA disagrees. The TMDL discusses sediment sources by source mechanisms.

Comment 14.7: Stream Bank Protection. Protection of stream banks from land use activities should be addressed as a controllable factor with a high priority for timely implementation.

RESPONSE: The TMDL includes a discussion of stream bank erosion, and includes an allocation for reduction from this sediment source. Some revisions to the implementation recommendations were made that include recommendations on timelines (see Comment 3.1 and 2.4).

Comment 14.8: Implementation Timeline. Allocations for mass wasting from roads should be achieved within 10 years, and mass wasting from timber harvest within 20 years.

RESPONSE: Some revisions to the implementation recommendations were made that include recommendations on timelines (see Comment 2.4).

Comment 14.9: Allocations by Year. Allocations should be measured on a % by year basis.

RESPONSE: EPA disagrees. Loadings will vary by year according to climate conditions and inter-annual variations, suggesting that loadings are more appropriately viewed as long-term averages.

Comment 14.10: Gravel Extraction. Should be discussed.

RESPONSE: EPA disagrees. There is so little gravel extraction in the South Fork Trinity that, at the scale of the TMDL, it is better to include it in the "cumulative/other" category.

Comment 14.11: Interim Targets. Include a schedule of interim targets for instream riparian, upslope and future conditions. Letter includes detail on these suggestions.

RESPONSE: EPA disagrees. Including interim targets could be appropriate for a phased TMDL. Since this is not a phased TMDL, adding these targets would add confusion to the document. These suggestions do not appear to be related to the South Fork Trinity River. Nevertheless, some of the suggestions are already addressed in the TMDL. Others would be more appropriately addressed in the implementation plan.

Comment 14.12: General Comment. It's very important to have accurate and appropriate analysis in these TMDLs, including source analysis allocation, targets with additional margin of safety, and some idea how, with reasonable assurances, the targets will be achieved over time.

RESPONSE: Comment noted. No change is required. The TMDL addresses these issues. Commentor is also referred to Comment 2.4.

Comment 14.13: Management Agency Agreement Between CDF and the Regional Board. Commentor made several statements regarding EPA's approval of best management practices, and specifically the Management Agency Agreement. Commentor feels that CDF does not have the facility to deal with water quality associated with timber management, and that information in the record suggests continuing problems from land use, mostly timber operations.

RESPONSE: This comment does not refer to issues that are required to be addressed in this TMDL decision. However, EPA encourages the State to address this issue in implementing the TMDL.

Comment 14.14: Information Limitations. There should be a discussion in each TMDL letting the public know that the information on which you are basing your decisions is the best information that you have and that there might be some level of inaccuracy involved due to the difficulty in measuring these things.

RESPONSE: Comment noted. We have included this discussion in the source analysis of the TMDL, and have added to it for clarity.

Comment 14.15: Trends in Sediment Loads. Statements about trends of decreasing loads might be inaccurate given that the rainfall periods that we've been looking at in the last 20 years seem to be diminished over the period of time.

RESPONSE: EPA acknowledges that there is some uncertainty in estimating sediment loads, and that the recent period in history probably reflects relatively low rainfall relative to the entire 20th century (Matthews 1998). However, over the period of analysis for the TMDL, we do believe it is accurate to state that loads appear to have decreased over the last 20 years despite some relatively high rainfalls and flood flows.

Comment 14.16: Hillslope and Instream Targets. I was struck that you did address some targets that were hillslope-oriented. I think that it's a good idea to look at different instream and near stream parameters. Hillslope targets can be measured in short periods of time, looking at eroded areas, including skid trails, in geologically unstable areas that need reduction targets, and will provide benefits in the resource with very short time lags. I think you should move forward in this area.

RESPONSE: EPA agrees that the inclusion of hillslope targets is appropriate.

Comment 14.17: Diversion Potential. The fact that 90 percent reduction is needed in potential sites where diversion potential is possible suggests that there's strong potential for more inputs unless policy is developed to limit those inputs over a period of time, meaning implementation.

RESPONSE: Comment noted.

COMMENTOR 15: Sarah Maninger, Arcata. Letter dated 11/15/98.

Comment 15.1: Implementation: Class 1, 2, 3 Streams; Erosion Control Plans; Road Density. The plan should be implemented with the following necessary additions: 1) Class 1 and Class 2 streams require stronger

streamside protections; 2) additional language needs to be added to assure that ephemeral Class 3 streams do not carry sediment downhill to fish bearing streams.; 3) erosion control plans must be fully implemented within the next 10 years; 4) road miles should be reduced to less than three miles per square mile.

RESPONSE: EPA agrees that these are important provisions of a plan to reduce sediment in the basin, andhas included these recommendations in the Implementation and Monitoring Recommendations section. Please see response to Comments 2.4, 3.1.

COMMENTOR 16: Michele Marta, Sonora. Letter dated 11/16/98.

Comment 16.1: Support for TMDL. I am pleased with the EPA's efforts in establishing the TMDL.

RESPONSE: Comment noted and appreciated.

Comment 16.2: Road Density. I suggest that road density be limited to less than three miles per square mile.

RESPONSE:Please see response to Comment 5.5.

Comment 16.3: Class 1 and 2 Streams. Please specify in the plans the retention of large conifers along the stream side. As a minimum standard, no less than five conifers of greater than 32 inch dbh per 100 feet of stream side should be permanently marked and retained along the stream.

RESPONSE: This could be an appropriate indicator for the retention of large wody debris. EPA did not have sufficient information to warrant including such an indicator in this TMDL; however, the State could consider it in their implementation plan or in a future revision to the TMDL.

Comment 16.4: Class 3 Streams. Please include a specific course of action, based on independent watershed analysis, to assure that ephemeral Class 3 streams do not carry sediment down hill to fish bearing streams.

RESPONSE: Please see response to Comment 15.1.

Comment 16.5: Implementation; Timeline. To assure the success of the plans, establish a time frame in which erosion control plans are fully implemented within the next 10 years.

RESPONSE: Please see response to Comment 2.4.

COMMENTOR 17: Tim McKay, Northcoast Environmental Center. Oral testimony at public hearing 11/19/98.

Comment 17.1: Effects of 1964 Flood. Commentor described sedimentation in the South Fork Trinity River at the confluence with Hayfork Creek, where some of the aggradation totals 10 to 20 feet. Doug McCleary, who may have worked on the Big Bar Ranger District, discovered that each of the sub-watersheds where more than 30 percent of the area had been disturbed by this intensive post-war logging were the ones that had failed and had channel scour and deposited the material into the mainstem of the Trinity River.

RESPONSE: Comment noted. Please see response to Comment 2.2.

Comment 17.2: Upslope Targets, Road Density. Road density is a big factor in sedimentation problems, the filling of big pools, similar to Redwood Creek, where the pools used to be up to 20 feet deep. We need to increase

the carrying capacity for salmonids to something closer to what it was historically. There's inherent natural variability from one year to the other in terms of fish that have returned, but it's now at a much lower overall level and we're on the verge of having these fish disappear. It would be easy to blame fishermen, but we haven't had much of a commercial fish harvest for ten years or more. Some other fish that was the basis of the tribal fishery are extinct. So the upslope targets are very important.

RESPONSE: Comment noted.

Comment 17.3: Timeline. The time frame is extremely important. Without some sort of date, compliance will slip.

RESPONSE: Please see response to comment 2.4.

Comment 17.4: General. It's useful to present information in "tons of sediment per square mile" as a dump truck loads figure.

RESPONSE: We agree that it could add additional value to the TMDL to provide this translation; however, we do not know of an appropriate translation for this request.

COMMENTOR 18: Marion Miller, Kneeland. Oral testimony at public hearing 11/19/98; letter dated 12/2/98.

Comment 18.1: General Comment on Watershed Damage; Targets; Methodologies, Timeframes and Monitoring. The necessary reductions identified in the document reflect the fact that the watershed has undergone significant damage from commercial timber extraction for the past 45 years, and those activities have damaged water quality, independent of periodic storms. I hope that the final document will retain the targets but with stringent, specific methodologies and enforceable timeframes and monitoring for the efficacy of those efforts.

RESPONSE: Comment noted. Please also see response to Comments 2.4 and 3.1.

Comment 18.2: Water Quality Priority. This planning effort is about water quality, which should be the priority over other public agencies or private companies and economic activities, particularly for people who may not live anywhere near the watershed. Other efforts over the past twenty years have failed because the agencies are not prioritizing the values of environmental protection. The first priority should be to recognize existing contributions to water quality degradation with the current road system. Commentor questions what the priority should be and notes that the goal of this process is to reduce sediment impairment, promote environmental quality and protect beneficial uses.

RESPONSE: Comment noted. EPA agrees that the TMDL is intended to improve water quality to the level that water quality standards are attained, and believes that this TMDL will lead to those improvements.

Comment 18.3: Roads and Road Density Target. Roads are the first priority for attention to improve water quality, and it is folly to minimize negative effects on water quality by continued new roadbuilding. I support the road density target of 1.70 mi/mi2, which acknowledges the high degree of existing unmitigated problems with roading, the obvious potential increased roading poses for water quality degradation, and the potential for intermittent disastrous effects of storm events in light of current erosion problems. Commentor contends that the USFS and commercial timber operators testified that the road density target was unreasonable because it would curtail commercial activities dependent on roadbuilding for the short term future until existing unused and damaged roads could be "put to bed" or restoration efforts be undertaken.

RESPONSE: See response to comment 5.5.

Comment 18.4: Need for Target for Road Crossing Fill Failure. General fill failure, not just crossing failure and diversion potential, is a significant factor which is not directly addressed in the draft.

RESPONSE: EPA agrees, and has added a target for road crossing fill failure.

Comment 18.5: Management-Related Sources; Roads. The statement that management-related sources accounted for about 35% of the sediment yield to Grouse Creek (p. 34) appears to totally disregard the effects of roadbuilding and failure on computing sediment yield within this category. Why are not roads part of "management -related sources," when the vast majority of roadbuilding is directly attributable to commercial timber extraction?

RESPONSE: Because the draft TMDL on p. 34 or elsewhere does not specifically mention the proportion of management-related sediment contribution to Grouse Creek, EPA assumes that the commentor is referring to the TMDL's statement that about 35% of the sediment sources overall are management-related. We disagree that the TMDL does not consider roads in this computation; the table on page 35, which summarizes the source analysis, includes roads in the 35% contribution. Please see response to Comment 2.2.

Comment 18.6: General Comment. I am grateful for this planning effort, which is meaningful and has the potential of redressing harm that continues to degrade water quality in the basin and poses significant risk of future harm.

RESPONSE: Comment noted.

Comment 18.7: Strengthen Standards; Enforcement. Please give these standards teeth, both in the realistic assessment of high standards and in the promulgation of enforceable mitigation and preventative measures.

RESPONSE: Comment noted. Please see response to Comment 3.1.

Comment 18.8: General Comments. I support the establishment of specific, legally enforceable, hillslope targets with the mandated component of annual inspetion and/or other enforeceable mechanisms to ensure those targets are achieved within dates certain.

RESPONSE: Comments noted. EPA has included a target regarding inspection and maintenance of roads. Please see response to Comments 2.4 and 3.1.

COMMENTOR 19: Leah Miller-Freeman, Hyampom. Letter dated 12/1/98.

Comment 19.1: Standards, Timelines. I encourage you to create stringent federal water quality standards and to articulate how those standards will be enforced, and that you set plans for mitigation that have time lines and consequences if they are not achieved. EPA believes that the TMDL will lead to attainment of water quality standards. Please see response to Comments 2.4 and 3.1.

RESPONSE: **boilerplate response re implementation, timelines. Also something about standards good achieve wqs.**

Comment 19.2: Hillslope Targets. I feel the hillslope targets are a critical aspect of the TMDL. The prospect of more roads being built concerns me greatly.

RESPONSE: Comment noted. We have included several targets related to roads as well as source reductions.

Comment 19.3: Historical Conditions. Ten years ago sediment didn't affect the South Fork Trinity the way it

does now. I remember seeing big fish in the water, and I don't see them anymore.

RESPONSE: Comment noted.

Comment 19.4: General Comment. I would like to thank the EPA for their action in proposing a TMDL for the South Fork Trinity.

RESPONSE: Comment noted.

COMMENTOR 20: Ralph Modine, Chairman, Trinity County Board of Supervisors. Oral testimony at public hearing 11/19/98; letter dated 12/1/98

Comment 20.1: General Comments. We recognize that increased sediment levels have occurred in the South Fork basin over the past 30+ years and that some of this sediment is the result of inappropriate land uses and management activities. The TMDL is well developed overall, with some exceptions.

RESPONSE: Comment noted.

Comment 20.2: Fish Population Targets; other factors. Trinity County agrees that other factors may retard progress on fishery recovery even if habitat conditions have recovery, and that it is not required that the spawning population recover in order to demonstrate attainment of water quality standards, if all other targets are met.

RESPONSE: Comment noted.

Comment 20.3: Value of Fish Population Targets. Target spawner numbers in the South Fork should be reduced to reflect the fact that greater numbers of salmon reached the South Fork in the 1950s-60s than could today because in-river harvest rates in the mainstem Trinity River were lower in the 1950s-1960s than are current harvest rates. Second, the Trinity River Restoration Program goal for the entire Trinity River basin is 6,000 natural spring chinook spawners. Based on the restoration program formula, the South Fork annual target should be less than 3,000 fish.

RESPONSE: We do not have adequate information to determine an appropriate reduction in the target based on the commentor's assertion that in-river harvesting rates were previously much lower. However, we have adjusted the target to 4,000 spring chinook based on the Trinity River Restoration Program goal (Jay Glase, pers. comm., 1998), which should adequately address the commentor's concerns. See also responses to comments 7.1, 8.3 and 9.7.

Comment 20.4: Hillslope Targets v. Instream Targets. We strongly recommend that the targets be modified to address hillslope, rather than in-stream targets, and that trend monitoring be used rather than specific numeric targets, because in-stream recovery is a slow process.

RESPONSE: Hillslope targets are included in the TMDL to supplement instream targets. Also see responses to comments 5.5 and 6.2.

Comment 20.5: Sediment Production from Fires. Better documentation of in-stream sediment contributions from fires appears to be internally inconsistent. Chapter 3 states that observations yielded little evidence of erosion problems, but Chapter 2 states that continued accelerated sediment production is found where large-scale forest fires have further exacerbated the problems. We have observed accelerated erosion following high intensity fires, but also in some low intensity fires where sediment contribution may have been overlooked. An example is where large logs store sediment which is then released during large storms, which may not occur for up to 10 years

following the fire.

RESPONSE: In performing field observations during 1998 to collect additional information on the TMDL, EPA's contractor did not observe stored sediment related to fire in the areas that had been subject to wildfire. It is possible that no stored sediment was observed because it had been previously released during a large storm event, as suggested by the commentor. In determining sediment yield from causes such as wildfire, contractor used a conservative erosion rate (i.e., would tend to over-predict erosion). EPA believes this is adequate to address the commentor's concerns.

The apparent internal inconsistency has been corrected with the addition of language that clarifies the issue (i.e., that the contractor did not find evidence of erosion, but that continued sediment production is likely on an interim basis as a result of forest fires.

Comment 20.6: Source Analysis. Appears to under-estimate the sediment contribution from catastrophic fire and may have over estimated sediment levels from management activities following the fires.

RESPONSE: EPA acknowledges uncertainty, in the source analysis, and utilized the best available information. Please see response to Comment 2.2.

Comment 20.7: Road Density Target. This target is too broad. Sub-basins in the northwest portion of the river account for the vast majority of treatable sediment sources, and the Hayfork Creek sub-basin is not a major contributor of sediment. This target is most appropriate to the major contributing source areas, and alternative density standards should be developed to reflect the conditions within the other sub-basins.

RESPONSE:Please see response to Comment 5.5. and 6.3.

Comment 20.8: Changes in Forest Management Since 1990. Harvest within the entire Trinity Forest has dropped to 12-22 MMBF per year (15%-27% of the lowest harvest level, 82 MMBF set in the Shasta-Trinity National Forest LRMP. We estimate that federal timber harvest levels within the South Fork have dropped to 5-10% of historic levels. Current harvest levels in the South Fork, combined with the implementation of riparian reserves contained in the FEMAT Option 9 and watershed restoration activities, are most likely contributing minimal sediment production to the river system. In addition, the California Forest Practice Act has stricter regulations since 1994.. The reliance on in-stream targets will not reflect the current hillslope conditions.

RESPONSE: The TMDL acknowledges the lower levels of timber harvest in the period since 1991. Additional information to adequately address sediment source contributions in this period was not available to us within the schedule constraints required by the Consent Decree. However, if additional information reveals that the allocations are already being met, then no additional reductions will be necessary. The instream targets are not intended to reflect hillslope conditions. See also response to Comments 5.4, 6.2 and 5.6.

Comment 20.9: Citations of Source Documents. References to Beryl (Berol) was a review draft, and may be inappropriate to support various points in the TMDL. Likewise, references to Bernard 1998, Jong 1997, Matthews 1998 and Raines 1998 are from draft documents that should be peer reviewed before being cited.

RESPONSE: It is appropriate for EPA to use the best available data to support the TMDL, including anecdotal references in some cases. The documents mentioned by the commentor are available by request, were the best information available to EPA, and are included as part of the public record. Anecdotal references in the TMDL were consistent with other quantitative and qualitative descriptions of conditions. EPA contractors completed some of the other work in the basin, which resulted in these documents being available only recently. However, they have been available on request.

Comment 20.10: Other Regulatory Actions/Sediment Reduction Plans. The plan should be amended to recognize other regulatory actions as acceptable sediment reduction plans, including approved Sustained Yield Plans, Habitat Conservation Plans, Non-Industrial Timber Management Plans, and Stewardship Incentive Plans all address the issues contained in the TMDL and avoid the appearance of duplicative requirements. It should also provide the linkage to the salmon conservation plan being developed for the counties within the coho salmon Trans-Boundary ESU, which could also be used as a sediment reduction plan for small landowners to adhere to. The county strongly opposes any wording that limits landowners' options to achieve the targets of reduced sediment, increased anadromous salmonids or improved water quality.

RESPONSE: EPA agrees that overlapping regulatory requirements should be considered in the State's implementation plan to both ease the burden on the landowners and strenghten the implementation effectiveness. These recommendations are included in the TMDL.

Comment 20.11: Implementation. We're hoping that the implementation of the TMDL corresponds with some of the efforts that we're already making in the 5-county coho effort, so that the County's rules under the coho effort will be consistent with the TMDL.

RESPONSE: See response to comment 20.10.

Comment 20.12: Private Citizen. The total private citizen activity is minimal compared to industrial, which is minimal compared to natural background. Whatever kind of regimentation is necessary is represented so that it's not oppressive.

RESPONSE: Comment noted. The TMDL does not set landowner-specific allocations. However, the TMDL and load allocations are set on a per-square-mile basis. Larger landowners and landowners who are engaging in more intensive land management practices may have to do more in the way of erosion control or prevention (other factors being equal) than owners of small parcels or who are not intensively managing their lands or producing sediment deliverable to streams.

COMMENTOR 21: Carol Moné, Trinidad. Letter (no date).
This letter is the same as the letter from commentor 15.

Comment 21.1: Implementation: Class 1, 2, 3 Streams; Erosion Control Plans; Road Density. The plan should be implemented with the following necessary additions: 1) Class 1 and Class 2 streams require stronger streamside protections; 2) additional language needs to be added to assure that ephemeral Class 3 streams do not carry sediment downhill to fish bearing streams.; 3) erosion control plans must be fully implemented within the next 10 years; 4) road miles should be reduced to less than three miles per square mile.

RESPONSE: See response to Comment 15.1.

COMMENTOR 22: Stan Plowman. Oral testimony at public hearing 11/19/98.

Comment 22.1: Baseline. For a baseline, are you looking at pre-1964 which was stable for a long period of time, or post 1964 where you have a dramatic change that you're now trying to repair?

RESPONSE: The information available to EPA within the timeframe for this decision includes the period 1944-1990. The source production is lumped into a single time period allows only a qualitative discussion by incremental periods. Since information for a baseline period is not available, we instead address the overall load reduction need based on comparisons between existing and target conditions. It is clear that management activities

intensified on a large-scale basis beginning in the early 1960s, and that dramatic changes occurred in the watershed following the December 1964 flood. Conditions appear to be recovering, but additional improvements are needed.

Comment 22.2: Public Participation. We need to see if the goal is achievable, and to make sure that landowners participate. It needs some explanation to go with it, so that landowners understand that it's simple, and they know what they need to do.

RESPONSE: We agree that the TMDL should be understandable to landowners and land managers alike.

COMMENTOR 23: John Rapf, Butter Creek Ranch, Hyampom. Letter dated 11/21/98.
This letter is the same as the letter sent by Commentor 13.

Comment 23.1: General Comment. I strongly support this initial step to improve the water quality of the South Fork Trinity River, and appreciate that this river is getting the attention it deserves.

RESPONSE: Comment noted and appreciated.

Comment 23.2: Logging Activities. My experience in the watershed predates the 1964 flood and I can testify to the destruction of fishery habitat as a result of reckless logging activities that continue to this day.

RESPONSE: Comment noted.

Comment 23.3: Upslope and Road-Related targets. It is difficult to quantify man's sediment contribution to the South Fork, but it is undoubtedly significant. Therefore it is important that the TMDL target the decrease of upslope and road related sediment production. This is the most obvious and sensible solution.

RESPONSE: Comment noted.Please see response to Comment 13.3.

Comment 23.4: Time Frame for TMDL Achievement. It is important that the reduction of human sediment production to the South Fork be achieved in a reasonable period of time. I suggest that the EPA require that plans be in place by January 1, 2000 and the implementation completed by January 1, 2010, and that the most at-risk sites be targeted in the early years. Without mandated dates and continued vigilance by the EPA I strongly suspect that we will only see continued delay by the responsible agencies and corporations.

RESPONSE: Please see response to Comment 13.4.

Comment 23.5: I hope that you can resist diluting the provisions of the TMDL as no doubt will be urged by some.

RESPONSE:Please see response to Comment 13.5.

Comment 23.6: Road Maintenance. People, agencies and corporations must come to realize that responsibility to care for roads on an annual basis is required.

RESPONSE: Please see response to Comment 13.6.

COMMENTOR 24: Steve Self, Sierra Pacific Industries. Oral testimony at public hearing 11/19/98.

Comment 24.1: Source Analysis. The sediment information is presented as a block of time from 1960 to 1990, without any idea in terms of incremental time periods as to what actually happened. There's textual references to a large portion of that having occurred in the '64-'75 period. It's difficult to get a sense of when the stream became impaired and whether the stream's capacity to move sediment is still exceeded in terms of input or if now the inputs are at a level that the stream is able to handle it and it's starting to move sediments out.

RESPONSE: We agree that it would be preferable to include information specific to individual time periods. However, this information was not available to EPA at the time of this TMDL decision.

Comment 24.2: Source Analysis. Commentor questions source analysis output on page 34, which lists average annual sediment input at 1,053 tons/mi^2/yr for the 1944-1990 period, and over 4,000 tons/mi^2/yr for the 1960-1975 period. Commentor also expresses frustration at not having the data to be able to comment more completely.

RESPONSE: The commentor has pointed out an error in the text, which has since been changed. We agree that it would be preferable to have data that describes in better detail happened during the individual time periods; however, that information was not available to us.

Comment 24.3: Legacy Roads. These are an inherited problem.

RESPONSE: Comment noted. Available information indicates that these roads also contribute to the sediment impairment in the basin, and the TMDL does not separate recent from older roads.

COMMENTOR 25: Paul Spitler, California Wilderness Coalition. Letter dated 11/16/98.
Part of group of similar commetns.

Comment 25.1: General Comment. The plan is a step in the right direction. South Fork Trinity River needs protection from nonpoint source sediment pollution presently entering the waterways.

RESPONSE: Comment noted.

Comment 25.2: Class 1, 2 and 3 Protection. The proposal needs streamside protection for all Class 1 and 2 tributary streams. The plan also needs language to be added assuring that ephemeral Class 3 streams do not contribute to the sediment loads of lower fish bearing streams.

RESPONSE: Please see response to Comment 3.1, 15.1.

Comment 25.3: Implementation. Implementation of erosion control plans must be completed within ten years.

RESPONSE: Please see response to Comment 3.1.

Comment 25.4: Road Density. There should not be more than three road miles per square mile.

RESPONSE: Please see response to Comment 5.4.

COMMENTOR 26: Tim Viel, NRCS. Written comments dated 11/17/98.

Comment 26.1: Causes of Mass Wasting. Page 1, paragraph 2, 2nd sentence states "The combination of unstable geology an erosion-producing land use practices has been blamed for the many mass wasting events..." which implies that all mass wasting was caused in part (in combination) by land use practices. However the studies referenced later in the report state that "92% of inner gorge landslides were assigned to natural causes."

RESPONSE: The statement on page one is not intended to imply that every individual landslide was caused by land use practices. Land use practices has contributed to the overall quantity of mass wasting events. In total, the factors of unstable geology, land use practices, and the combination of land use practices on unstable geology have contributed to mass wasting.

Comment 26.2: Diversion Potential. Page 24-25, last sentence starting on page 24, in discussion of diversion potential, we do not define diversion potential as "the volume of sediment at the road crossing that could potentially be introduced to the stream system." We define diversion potential as the potential for the stream to divert away from the crossing and down the road if the existing culvert or drainage structure should become overwhelmed. This does not consider the capacity of existing culverts or drainage structures. We also provide a table that shows the diversion potential for Smoky Creek, East Fork South Fork, Plummer Creek, Upper South Fork and Happy Camp, and Pelletreau Ridge. The data is only for "stream crossings" which we define as road crossings of active, defined stream channels, typically identifiable on a standard USGS Quad sheet.

RESPONSE: EPA agrees, and appreciates the comment. We have added a target to address the potential for crossing failure and to clarify the differences.

Comment 26.3: Impairment/Hillslope Delivery. Page 25, paragraph 4, 3rd sentence: A basin may not have a sediment impairment but hillslope delivery can still occur.

RESPONSE: EPA agrees, and we changed the text.

Comment 26.4: Diversion Potential and Crossing Fill. Page 26, paragraph 2, 2nd sentence: If the drainage is diverted away from the crossing the crossing fill at that crossing will not enter the stream.

RESPONSE: The addition of the crossing failure target will address this concern.

Comment 26.5: USFS Road Mileage. Page 27, Table 6 refers to USFS roads in the mileage only. Are USFS roads the only ones to be regulated?

RESPONSE: This table was removed. Please see response to Comment 5.5.

Comment 26.6: Error in Tables 7-8. Page 37, Table 8: Sediment yield totals from management sources don't add up compared to Table 7.

RESPONSE: **need to check.**

Comment 26.7: Floods in 1983 and 1986. Page 43, paragraph 1, 1st sentence refers to the "absence of large storm events in the 1975 to 1990 time period." After the 1964 flood the next two largest flood events occurred in 1983 and 1986.

RESPONSE: This is correct. The text has been clarified.

COMMENTOR 27: Sheóm Walker-Rose, South Fork Trinity River Land Conservancy. Letter dated 11/28/98.

Comment 27.1: General Comment. I am a 20 year land owner and resident on the south fork Trinity River, and have been very concerned with declining fisheries and the increase in logging and road building which seems to contribute a large share of sediment to the river. We support this step to improve water quality and protect and rehabilitate the native anadromous fish population.

RESPONSE: Comment noted.

Comment 27.2: Management-Related Sediment Contribution. We have driven and walked a great deal of the roads in this watershed and question the source analysis that claims only 35% of the sediment is due to management sources. The loss of soils sediment and debris from roads and logging seems to be much greater than estimated. Please reevaluate your data and your sources of information.

RESPONSE:Please see response to Comment 2.2.

Comment 27.3: Hillslope and Road Related Targets; Timelines. The only way to improve water quality is to reduce hillslope and road related sediment. We think it is crucial ton include the hillslope and road related targets and time lines.

RESPONSE: We agree. Please see response to Comment 2.4.

Comment 27.4: Crossing Failure Target. Target 4A should be expanded to include failure potential other than diversion.

RESPONSE: We agree, and have added a target to address crossing failure.

Comment 27.5: At-Risk Roads. Target at-risk roads first.

RESPONSE: We have added a target that addresses roads in steep, inner gorge areas and potentially unstable headwater swales, and we added text regarding higher priority for roads in the less stable western third of the basin.

Comment 27.6: Road Maintenance Target. Target 4C should require all roads to be hydrologically secure with fail-safe designs. It is also important that the whole road prism receive annual inspection to prevent major problems from developing.

RESPONSE: We agree, and we have adjusted the target to reflect this concern.

Comment 27.7: Hillslope Targets; Timelines. Hillslope targets are the most important part of the TMDL, and must be accompanied by an expectation of achievement with a reasonable time. We would like to see the EPA require plans to be in place by January 1, 2000 and the implementation complete by January 1, 2010. We would like to see at risk roads targeted first.

RESPONSE: Please see response to comment 2.4.

Comment 27.8: Targets, Timelines, Enforcement. We feel this TMDL is a good step in the protection of the watershed. Without hillslope targets, strict timelines and EPA enforcement it will be of little use. We hope you will strengthen this document so that it can be truly effective.

RESPONSE: Please see response to Comments 2.4 and 3.1.

COMMENTOR 28: Karen Wilson, South Fork Trinity Up-River Friends. Letter dated 12/2/98.

Comment 28.1: Precipitation. Page 7, does not make a distinction between areas which are likely to receive rain-on-snow. The effects of the 1964 season were due to effects from rain-on-snow rather than simply precipitation. A means of measuring rain-on-snow is the volume of water that flows, which is measurable by a stage gage. This

should be mentioned in the TMDL. If it is recommended, or if the expense is prohibitive, or if the decision about it is under another jurisdiction, that should be stated. In addition, please provide a reference for how the information for Figure 5 was derived.

RESPONSE: We have added text regarding rain-on-snow as one of the factors that can cause unusually high flows. It appears that the commentor is suggesting that EPA should recommend measuring river stage as some component of the TMDL. EPA disagrees that volume of water is an effective means of "measuring rain-on-snow," or that this is the most critical component of hydrologic investigations related to water quality in the South Fork Trinity River. This is not a recommendation that is included in the TMDL. However, we do agree that measuring river stage as a means of estimating flow volume adds important information to the understanding of how the watershed functions, and in fact the data was used for developing the hydrological background for the TMDL (Matthews 1998). The California Department of Water Resources and the U.S. Geological Survey both operate stream gages, and the commentor is advised to contact those agencies for further information. The reference to Figure 5 is included on that figure, and listed in the References section in the TMDL. We provide it here for the commentor's convenience: *California Dept. Of Water Resources. 1982. South Fork Trinity River salmonid habitat enhancement studies. Prepared for Calif. Dept. Of Fish and Game.* The figure was taken directly from the document, which should be available in the Trinity River section of the Trinity County Library in Weaverville.

Comment 28.2: Editorial Question. What does it mean to say (p.11) that monitoring in the basin has "continued beyond" what was summarized in the Action Plan (PWA 1994)?

RESPONSE: We have clarified the language to explain that the Action Plan summarized monitoring results in the basin up through about 1993, and that agencies and landowners have continued to monitor conditions in the basin, and that the results of that monitoring are not included in the Action Plan.

Comment 28.3: Allocations; Management-Related Sediment. The TMDL states that if further analysis indicates that the quantity of management-related sediment is even greater than the amount that was in the source analysis plus the amount allocated to the margin of safety, then the allocations would need to be revised based on that additional information. Will this further analysis be a part of the State's responsibility?

RESPONSE: If additional information becomes available, the State would be responsible for determining whether a revision to the TMDL would be called for in the future, for determining whether additional analysis would be required, and for conducting that analysis.

Comment 28.4: Margin of Safety. The TMDL (p53) states that major storms could change the channel morphology and may trigger the need to reconsider the TMDL and associated allocations following such an event. Please discuss further the determination of such events; if it is big enough to cause reconsideration of the TMDL, how will we know when it happens?

RESPONSE: The TMDL states that storms with a recurrence interval of 50 years or more are likely to cause major changes and could trigger a need to review the TMDL. The State would be responsible for making this determination.

Comment 28.5: Wild and Scenic River. Page 56 appears to be the only place where the TMDL references the Wild and Scenic River status of the South Fork Trinity River. We believe that it deserves more emphasis. Furthermore, it is incorrect in that it does not refer to the status that the upper portion enjoys as a U.S. Forest Service recommendation as a candidate, which gives it even greater protection. It would be appropriate for EPA to recommend that the process of designation be expedited.

RESPONSE: EPA disagrees. We do not believe that it would be appropriate for EPA to "expedite" the designation of the upper portion of the river as part of the TMDL decision. The TMDL does mention the river's protected

status in the Introduction. It is not clear to us what specific changes the commentor is asking for in stating that it deserves more emphasis. No change is required to the TMDL.

Comment 28.6: General Comment. We do believe that sincere, hard work went into the content of the document. Our letter of April 14, 1997 is attached for reference. In it we state that a distinction must be made between Wild and Scenic rivers and those that are not (standards are even higher for proposed, but not designated). EPA has stated that these streams can have no degradation.

RESPONSE: Comment noted. No change is required.

COMMENTOR 29: S.E. "Lou" Woltering, Forest Supervisor, Six Rivers National Forest, for the Northern Province Forest Supervisors

Comment 29.1: Instream Targets and Indicators. Instream targets are an unsatisfactory means of enforcing and achieving restoration of water quality in impaired watersheds. They are unsupportable because of the lack of a credible relationship between hillslope actions and downstream responses, and they do not reflect the range of natural variation that would occur in a natural environment. They can be taken out of context and used as invalid determinations of water quality attainment. We feel that instream targets should be expressed as a range of natural variation and that their best use may be as a monitoring tool that will indicate trends in overall watershed health. We recommend that ranges of instream indicator targets be used to assess improving trends rather than compliance/non-compliance numbers, and that these instream indicators and targets be clearly qualified as legally unenforceable, as the State has suggested. We suggest establishing a target range rather than a single number (using a best estimate from available scientific data), and state that the range will be adjusted as further analysis warrants.

RESPONSE: A range of instream and hillslope targets have been established in order to reflect conditions that represent attainment of water quality standards, as described in the TMDL. These are best descriptions of desired future conditions from the best available scientific data, based on existing literature and conditions within the watershed. These have not been established as a means of "enforcing and achieving" water quality standards, nor as a means of establishing cause-effect relationships of off-site management activities. The target values that were selected do represent a range of conditions. To clarify this, those that were stated as particular values were changed to reflect that range (e.g., "less than or equal to") and the text was clarified to note that these values are intended to be interpreted as a long-term running average (e.g., over a ten-year period) to account for variability. Additional clarification is added to note that inter-annual variability is expected. Please see response to Comments 5.4 and 6.2.

The State is free to propose modifications to the TMDL, which would be appropriate if further analysis warrants a modification.

Comment 29.2: Fish Population Indicator. We suggest that the fish population recovery indicator and target be omitted, as it assumes that the sole or principal limiting factor is sediment input. This indicator does not take into account other aspects of the species' life histories, including ocean conditions and survival. Limiting factors for salmon and steelhead production in the South Fork Trinity River have never been established. This indicator implies that fish habitat is limiting factor in the watershed, and that a failure to meet the fish population recovery target will mean a failure to increase fish habitat by reducing sediment. The reference by Dean 1996a argues for not including a fish population target as a measure of "recovered habitat conditions."

RESPONSE: See response to comments 7.1, 8.3, 9.7, 20.3.

Comment 29.3: Percent Fines in Pools Target. We do not support the use of percent fines in pools as a target.

The data are based on ocular estimates that are believed to be unreliable. The comparisons between years makes comparisons between streams difficult, and comparisons between streams with gross differences in size and drainage densities are also problematic. The analysis in Pacific Watershed Associates (1994), which was an attempt to link fine sediment and the abundance of juvenile steelhead in pools has also been discredited for the same reasons.

RESPONSE: We agree that this target is not the strongest candidate to reflect attainment of water quality standards; therefore, we have removed it from the TMDL.

Comment 29.4: Hillslope Indicators. The Forest Service is encouraged that the TMDL includes hillslope indicators, which are most likely to represent long-term sediment reduction as well as improve instream habitat. We recommend that the hillslope indicators be identified as the legally enforceable targets.

RESPONSE: The state may choose to repeat the use of these indicators in defining their implementation plan. See also response to Comment 6.3.

Comment 29.5: Road Density and Road Maintenance Indicators. We recommend that this be replaced with other hillslope indicators that would be better correlated with sediment reduction.

RESPONSE:Please see response to Comment 5.5.

Comment 29.6: Diversion Potential Indicator. This target appears reasonable and supportable.

RESPONSE: Comment noted.

Comment 29.7: Stream Crossing Failure. We recommend the addition of a stream crossing failure indicator, e.g.,: increase culvert capacity and reduce consequences of crossing failure as much as feasible, improving the highest risk 80+ percentile (per Flanagan et al., 1998).

RESPONSE: EPA agrees, and we have added a target to address culvert capacity/crossing failure potential

Comment 29.8: Hydrologic Connectivity. We recommend the addition of an indicator of hydrologic connectivity of roads to streams, e.g., disconnect 70% of the "disconnectible" road segments that are currently hydrologically connected to streams (Furniss and Flanagan, in prep.).

RESPONSE: We have clarified Target 4c to include hydrologic connectivity.

Comment 29.9: Road Maintenance Indicator. We recommend removing the road maintenance indicator, because it is not meaningful as written. Some maintenance can increase water quality impacts. The most important types of maintenance will focus on the performance of roads in terms of stream crossing capacity and hydrologic connectivity.

RESPONSE: We have modified the road maintenance indicator to include annual maintenance and/or hydrologic disconnection, permanent road closure or decommissioning.

Comment 29.10: Road Mileage on High Risk Terrain as an Indicator. This would be an appropriate indicator. A suggested target would be <5% of total road mileage in any subwatershed in Lower or Upper South Fork sub-basins.

RESPONSE: We have modified the TMDL to address particularly high risk terrain. We disagree with the idea of limiting mileage to <5% of total road mileage, unless it also includes a limit on overall increases in mileage. As modified, the roads targets are adequate to address commentor's concerns. This would not adequately protect water quality.

Comment 29.11: Establishing Roads Targets is Premature. Six Rivers National Forest will identify indicators for water/road interactions within 6 months. Thus, fixing targets now is premature, as they will be superseded by Forest Service analysis technology and policy.

RESPONSE: EPA looks forward to working with the Forest Service to identify indicators that will be effective for the USFS National Roads Analysis process as well as for TMDL development affecting lands managed by the Forest Service. Due to our court-ordered deadline, we must use the best available information to develop this TMDL. EPA encourages the Forest Service to work with the State to suggest future revisions to the TMDL as new information becomes available.

Comment 29.12: Bank Erosion Allocations. The Forest Service recommends that bank erosion not be attributed directly to management actions since there is no evidence to support such an assumption. A substantial fraction of all bank erosion involves remobilization of alluvial fills, most of which probably resulted from the 1964 and earlier floods. Also, the fraction of bank erosion that might be attributed to management would be considerably smaller than the fraction of mass wasting and surface erosion volumes associated with management. It is more accurate to present it as a cumulative but unknown effect, with some small fraction indirectly attributable to upslope management in the past.

RESPONSE: Since it is an unknown effect, EPA is required to err on the conservative side. However, EPA agrees that it would be more appropriate not to try to distinguish among management factors. Of the total amount of bank erosion estimated, only 35% is attributed to management causes. This amount is a conservative estimate, based on the amount of overall sediment production attributed to management causes. Undoubtedly, even some of the remobilized sediments from the 1964 flood deposits are due to management causes. As a fraction of overall sediment production, the amount estimated for bank erosion is less than that determined for the fraction due to surface erosion and mass wasting associated with management. See response to comment 2.2.

Comment 29.13: Geographical Distributions of Targets and Allocations. Targets and allocations among the various erosional source mechanisms should be distributed geographically (by subwatershed or sub-basin), due to the differences in mass wasting and erosional regimes in different parts of the basin.

RESPONSE: EPA disagrees that all targets should be allocated geographically, however, we have distinguished a notable difference for one target. Please see response to Comment 11.2 and 6.4.

Comment 29.14: Controllable Load for Road-Related and Harvest-Related Mass Wasting. We recommend that the percent controllable for road- and harvest-related mass wasting be reduced at least to levels comparable to those in other TMDLs. Road-related failures often occur within the first few years of a road being built. Very few new Forest Service roads are being built and it is unlikely that the Forest Service will be able to "control" mass wasting on roads beyond that attained by upgrading stream crossings to pass the 100-year storm and reducing/eliminating diversion potential.

RESPONSE:Please see response to Comment 6.5.

Comment 29.15: Sediment Impairment in the South Fork Trinity River isNnot Clear. There is not at present conclusive evidence that water quality and fish habitat in the South Fork Trinity River are impaired due to sediment. There is evidence that high sediment loads have been characteristic of the South Fork Trinity

throughout the 20th century, as are other watersheds in similar geologic terraces. The TMDL process has been operating on the assumption that all water quality conditions thought to be ideal for fish habitat should be the goal of management.

RESPONSE: EPA disagrees. While it is true that high sediment loads are characteristic of many North Coast watersheds, there is evidence that accelerated erosion rates are associated with increased management in the 20th century. This sediment TMDL is intended to address water quality standards, including support of beneficial uses of water associated with sediment.

Comment 29.16: Incomplete Analysis in the TMDL. This TMDL is fraught with faulty assumptions, arbitrary targets and allocations based on incomplete analysis, and should include a statement in the introduction that the TMDL has been developed within an inadequate time frame for complete analysis, that the analysis should be continued to determine what the natural range of variability of water quality and fish habitat conditions are within the watershed, and that the TMDL will be modified to fit within this broader, more appropriate context in the future.

RESPONSE: EPA disagrees. This TMDL is based upon the best information available at the time of its development. However, it does not preclude additional analysis from being conducted, or additional data being collected, by any party in the future. Nor does it preclude future modification of the TMDL.

Comment 29.17: Channel Aggradation and Sediment Transport. I disagree with the general premise that aggradation reduces a stream's capacity for downstream sediment transport (p 15.)

RESPONSE: Aggradation reduces the channel cross-sectional area and, all other things being equal, the transport power of the stream will be reduced.

Comment 29.18: Editorial Suggestions, pp. 15, 19, 34, 36, 39, 42, 43, 45, 46. Fig. 6, Table 9.
RESPONSE: Agreed. Suggested changes were made.

Comment 29.19: Fish Population Target. Population recovery in the South Fork would only indicate restored habitat conditions if that were the only or primary factor responsible for the decline, which is likely not the case. If ocean conditions or predation are the overriding factors responsible, then the population could show recovery with no substantive change in habitat quality or quantity.

RESPONSE:Please see response to Comment 7.1, 8.3, 9.7, 20.3.

If factors outside of the basin improve and population improves, could indicate that the habitat targets should be changed. This does not assume effect-cause. Not trying to state that improved habitat will necessarily bring the fish. Not stating that fish population must recover in order to indicate attainment of water quality standards. But if the fish do come back, it is the best indication that water quality standards in the basin (i.e., support of the cold water fishery) have been attained. At that point other physical factors in the basin could be re-evaluated if necessary.

Comment 29.20: Sand/Fines in Pools Target. A target level of 20-25% would likely be satisfactory since the observed break point between the two stream categories is about 30% (p 23). This is probably the best (or least bad) in-channel parameter to be used as an indicator.

RESPONSE:Please see response to Comment **29.3.**

Comment 29.21: Road Maintenance Target. It should be kept in mind that conventional road maintenance (p 29) doesn't necessarily equal "hydrologic inspection" and doesn't guarantee "hydrologically maintenance free"

roads.

RESPONSE: This indicator , as modified, appears to address commentor's concerns.

Comment 29.22: Source Analysis; Mass Wasting. A note should be included in the last paragraph (p 31) about the allocation of volumes to the period of first appearance, and maybe an estimate of how much of the total volume actually delivered in later periods. In our sample analysis, the average enlargement was 90%, mostly in the 1960-75 period. In the combined landslide inventory, 98 of 337 slides that appeared before 1960 enlarged after 1960.

RESPONSE: This change was made.

Comment 29.23: Source Analysis; Management-Related Mass Wasting. In the source analysis (pp. 34 ff) and the Sediment Source Assessment Results, references to "road-caused," "harvest-caused," "roads responsible for" etc. should be changed to "associated with" or "related to" since the protocol for mass wasting sediment sources was not generally capable of determining anything more than spatial coincidence of landslides with management activity.

RESPONSE: EPA agrees, and has made the suggested changes.

Comment 29.24: Source Analysis Time Period Differences for Grouse Creek Subwatershed. The footnote 1 to Table 7 should state that the adjusted time period very likely overestimates Grouse Creek sediment yield.

RESPONSE: EPA agrees and has made the suggested changes.

Comment 29.25: Bank Erosion Source Estimate. Explain in Table 7 footnote 3 and p. 41 how the bank erosion value was determined from the large range presented.

RESPONSE: We have made this modification.

Comment 29.26: Non-management Mass Wasting Rates. Why is it noteworthy that the estimate falls within the range of mass wasting values presented in the Garcia River TMDL? (P 36). I believe that one-third to one-half of the so-called management-related landslide volume should be attributed to natural causes (p 36, 42, 5-).

RESPONSE: The information was included as a a simple comparison of another north coast watershed. EPA disagrees that the landslides related to management may be overestimated by one-third to one-half, and we do not have adequate information available to us to change our assessment. While it is possible that the sediment source analysis identified some naturally-caused landslides as management related simply because they were coincidental on aerial photographs, it is also possible that the analysis failed to identify landslides that were management-related, simply because the management activity or group of activities were not within the air photo. EPA prefers to err on the conservative side, in the absence of additional evidence. Clarification has been added to the Margin of Safety discussion to include the likelihood that some landslides identified in the analysis as "management related" are actually naturally caused.

Comment 29.27: Table 10 Editorial Suggestions.

RESPONSE: Clarification added. The intervals are listed correctly as they fit into the sediment budget time intervals.

Comment 29.28: Comparison of Existing Conditions with Target Levels. The premise that reducing sediment sources collectively by some uniform amount will yield to generalized improvement in stream habitat is overly simplistic and could lead to ill-advised strategies rather than effective, focused ones. An assumed one-to-one

correspondence is unfounded as fluvial systems are non-linear and involve threshold type response rather than gradual response.

RESPONSE: EPA agrees that this approach is simplistic. However, the TMDL uses the one-to-one correspondence as a conservative approximation of results that will take place over time and undoubtedly in an episodic nature. Text was added to clarify that the assumptions made in the linkage analysis are intended as a conservative way to estimate sediment reductions, and are not intended to represent direct cause-effect linkages, which are poorly understood at this time.

Comment 29.29: Sediment Loading Capacity. The estimate of 737 tons/sq. mi./year is about the same as the non-management related loading for 1944-1990 (682 tons/sq. mi./yr.), which is clearly an unattainable goal (p. 46).

RESPONSE: This is the best estimate available, based on existing information, of an appropriate loading. We acknowledge that it is stringent, but disagree that it is unattainable. Where uncertainty exists, we are required to er on the side of protecting the resource (i.e., the conservative side).

Comment 29.30: TMDL; Lag Times. With such a large time lag between corrective action and response, how can one presume to take the particular action to correct the offending problem? Furthermore, a 50- or 100-year storm could increase actual sediment loading beyond the target level for a period even if most of the loading is natural.

RESPONSE: EPA determined the allowable load based on the best available information. It is possible that additional information will be available in the future, which could change those determinations. We acknowledge that loading could change beyond the target level for a period following a large storm event, and we suggest that these loadings be viewed as long term averages to account for such variability.

Comment 29.31: Load Allocations. Many of the larger confined landslides could actually be considered point sources (p. 47). Also, the logic seems questionable, of balancing the numbers for the allocations using an educated guess of controllable fraction for each category, which leads to a hypothetical "discrepancy" of 63 t/mi2/yr that is then somehow accounted for as "management-related, non-management assigned" mass wasting sediment production.

RESPONSE: EPA acknowledges that the process of determining load allocations is imprecise. However, this is the best information available to us at this time. The uncertainty is generally accounted for with conservative assumptions.

Comment 29.32: Allocations; Bank Erosion. How can present day land managers be held accountable to reduce a large fraction (35%) of bank erosion (that might be attributable to former practices) by applying better practices on the hillslopes in the present (Table 13)?

RESPONSE: EPA determined the allocation based on the best available information. We acknowledge the uncertainty inherent in the process, which requires us to err on the side of more stringent protections for water quality. Additional infomration in the future could be considered by the State in a revision to the TMDL, if appropriate.

Comment 29.33: Allocations; Mass Wasting. We don't really know what percent of harvest or road-related mass wasting is controllable (avoidable). Probably the best estimate would be 50%, but that depends on exactly what our strategies are for identifying and avoiding susceptible sites.

RESPONSE: Please see response to Comment 6.5.

Comment 29.34: Margin of Safety. The sources of uncertainty should include language that management-related landslides are over-predicted by one-third to one-half, and under conclusions it would be more accurate to say that nearly all of the uncertainties in the source analysis were such as to put upper limits on the management-caused sediment, and therefore additional conservative assumptions regarding loading reductions is probably not warranted since that would amplify the uncertainties and over predict the necessary reductions.

RESPONSE: The regulations require that a Margin of Safety be included to account for uncertainties, and essentially requires that, in the absence of additional information, that errors be made on the side of overpredicting necessary reductions. Please see response to Comment 29.26.